

The Carriage of Rice

Introduction

Rice is a sensitive cargo and claims arising from the carriage of rice are not unusual. However, it is equally common for cargo interests to blame the vessel for any shortages, damage or deterioration irrespective of the actual cause.

In particular, the reasons why rice may deteriorate on passage need to be understood so that, where possible, action can be taken to carry and deliver the cargo in sound condition.



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Bagged rice cargoes frequently give rise to claims for shortage and / or damage

Endeavouring to minimise shortages is equally important, particularly in countries where short delivery may result in heavy fines.

To minimise the possibility of claims due to quality or quantity issues, this Loss Prevention Bulletin contains guidance on the problems associated with the carriage of rice and the precautionary measures that may help to reduce such losses.

The carriage of bagged rice cargoes from South East Asia to West Africa gives rise to the majority of incidents experienced by the Club and claims for shortage and/or damage due to cargo wetting and deterioration are not uncommon. Although the guidance in this Bulletin is principally aimed at this trade, the following precautionary measures should be considered whenever rice is carried regardless of where it is loaded or discharged.

Types of Rice

There are many varieties of rice that may be presented for shipment and their characteristics can differ. However, in general terms all rice grains or “kernels” are covered with, and protected by, layers of bran. The bran itself is surrounded by a hard outer husk or hull which may also be referred to as chaff.

The description of the rice will largely depend on the degree of processing. The proportion of broken grains may also be stated. The most common types of rice are summarised below:

Paddy rice/raw paddy/rough rice

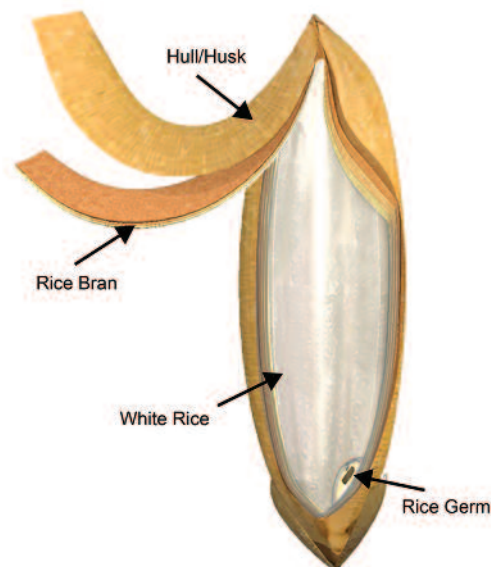
Rice grains which have not been de-husked.

Brown rice/cargo rice

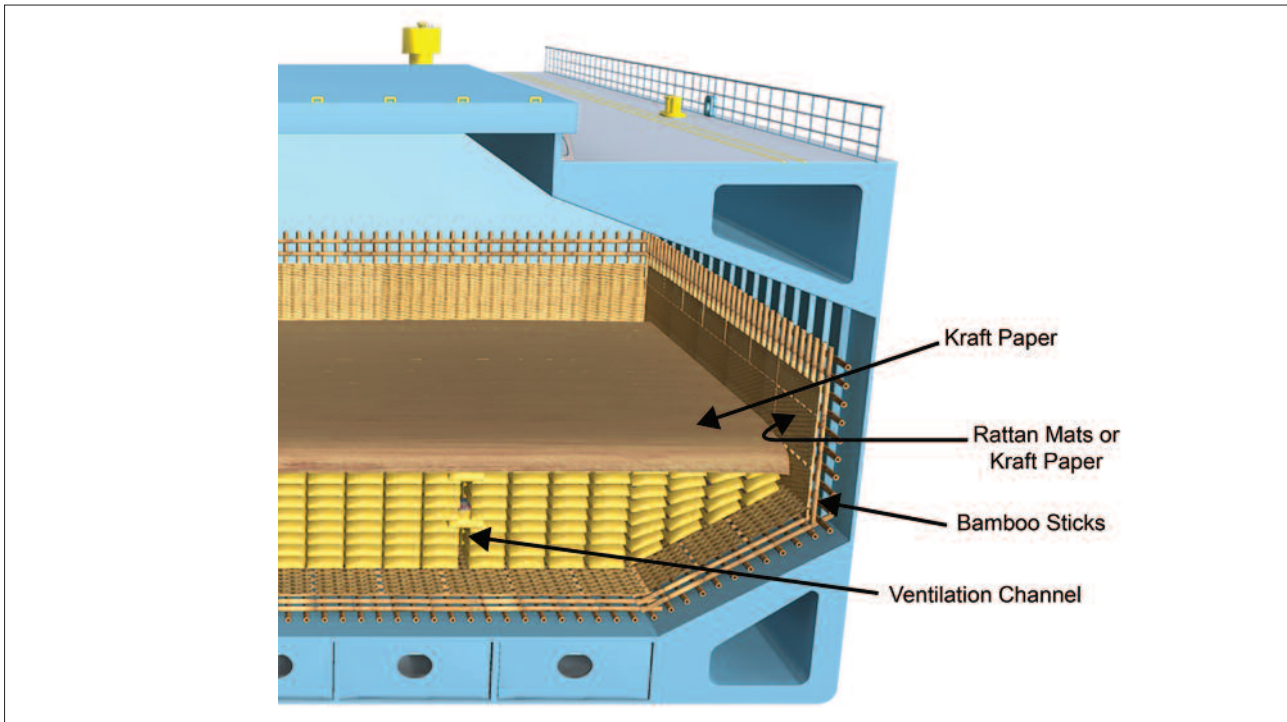
De-husked rice that has not been milled or “polished”, leaving most of the bran on the grain.

Parboiled

Rice that has been soaked in hot water or steamed prior to being dried, de-husked and polished.



Parts of a grain of rice



Traditional dunnaging arrangement

Under-milled/semi-milled/reasonably well milled

De-husked rice which has been polished but where streaks of bran are still evident.

White rice/milled/over-milled/wholly milled

De-husked rice that has been polished to remove the bran. It may be glazed with glucose and talcum to improve its appearance, or coated with a film of oil (eg “Camolino” rice).

Broken rice

White rice damaged during processing comprising of whole grains together with a percentage of broken grains.

Size of Rice

In addition to the type of rice, the shipment details will usually state the grain size:

Short grain or round rice

Small, round grains that become glutinous when cooked, often used to make rice pudding and similar dishes. Grain length is 5.2 mm or less.

Medium grain rice

Rice between 5.2 mm and 6.0 mm in length considered to be ideal for making dishes such as risotto and paella.

Long grain rice

Long and slender grains exceeding 6.0 mm in length which do not stick together during cooking.

Bagged Rice

The most common type of rice shipped by sea is milled white rice in bags. Brown rice is transported in much smaller quantities.

Rice is generally packed in 20 kg, 25 kg or 50 kg woven polypropylene bags. The use of jute bags is now less frequent.

Preparation Prior to Loading

Hold Cleanliness

Prior to arrival the holds should be thoroughly cleaned, washed and dried. Any traces of previous cargo should be removed and close attention should be paid to making sure that areas which are difficult to reach (eg underdeck framing) are free of such residues. After washing down with seawater, the holds should be rinsed with fresh water to eradicate all traces of chlorides from the steelwork. This is particularly important as chlorides may combine with any sweat (condensation) that may develop on passage. If a silver nitrate test is subsequently carried out, the results are likely to be positive and may provide cargo interests with an opportunity to allege that seawater entered the holds during the voyage and caused cargo damage.

All loose paint and rust scale should be removed, bearing in mind that higher, more inaccessible areas of the cargo holds are at greater risk of developing such problems. The reverse side of pipework and other structures within the holds should

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also be checked for loose paint and scale that may be concealed.

Since rice is susceptible to taint, all holds should be well ventilated until they are odour-free. Should any signs of infestation be found, the services of a specialist pest control company may be needed. Any particular hold preparation requirements specified by the charterer or shipper should be addressed well in advance. Holds which have not been properly prepared may result in delays and additional expense if they are rejected by the shipper's surveyor on arrival.

Pre-Loading Checks

Cargo hold bilge wells should be inspected, cleaned and tested, ensuring that all bilge well non-return valves are functioning correctly. Bilge line isolation valves in the machinery space should always be kept shut when the hold bilge pumping system is not in use.

It is essential that the checks are made to verify that hatch covers and the sealing arrangements on hold ventilators and hold accesses are completely weathertight. Ideally the hatch covers should be tested using ultrasound equipment, but if not available a hose test should suffice. In addition to preventing water ingress, the hatch covers also need to be weathertight for the purpose of preventing toxic gas from escaping if the cargo is fumigated on completion of loading.

Hatch coaming drain channels, drain pipes and non-return valves should be free from cargo residues, rust scale and paint flakes. Drain pipe non-return valves should be tested to ensure they are functioning correctly.

The operation of the hatch covers should be checked to confirm that they can be closed promptly if rain threatens to interrupt cargo work, rather than finding out at the last minute that the operating system does not work as intended.

If safe, practicable and permitted by local regulations, the ballast tanks bordering empty cargo holds should be hydrostatically tested for water leakage by overflowing them on deck. However, such a test should not be carried out if an adjacent hold contains cargo in case of unexpected outflows.

Stowage and Dunnage

Stowage

To avoid the possibility of taint, rice should not be stowed together with cargoes having a strong odour such as coffee or fishmeal. Such products should be stowed in another compartment fitted with a separate ventilation system.

It has long been the custom to build air gaps into the stow to aid ventilation, typically creating two longitudinal and three athwartship channels approximately 15 to 20 cms wide. The athwartships ventilation channels are normally situated under the centre, forward and aft ends of the hatch square, and the



Photo courtesy of: ETIC/Africa P&I Services

Typical athwartships ventilation channel. However, experts question whether ventilation channels are necessary at all

longitudinal channels are usually formed in line with the ventilators. Single bags are then positioned across the ventilation channels every fifth tier to key the stow together, spaced five to ten bags apart. Experts, however, question whether these channels are necessary at all as there is now scientific evidence showing them to be ineffective. What limited air circulation they provide can be counterproductive as ventilation channels provide a route for warm, moist air to rise to the top of the hold, increasing the possibility of sweat in that area.

Dunnage

To minimise the risk of costly claims caused by ship sweat it is essential to prevent contact between the bags and any adjacent steelwork.

In the absence of cargo battens or spar ceiling, suitable dunnage should be placed against all frames and plating inside the cargo holds to protect the bags from ship sweat which, in addition to forming on vertical surfaces, may trickle downwards over the lower hoppers and form pools of water on the tank tops.

The dunnage should be laid so as to allow any sweat that forms on cold surfaces to run off freely into the bilges without coming into contact with the adjacent bags. Standard dunnaging practices have been developed for this purpose, although the precise arrangements may vary depending on the port of loading, and the type and availability of dunnage and other protective materials. Dunnage disposal arrangements at the discharge port should also be considered as some countries do not allow certain types of wood, particularly bamboo, to be removed from the ship.

Traditional Dunnaging Arrangement

Traditionally, bamboo poles are laid fore and aft on the tank tops in rows not more than 20 cms apart. A second layer of bamboo poles is then laid on top at right angles and the two



Photo courtesy of: ETIC/Africa P&I Services



Rattan mats used in the traditional dunnaging arrangement

layers are interwoven or tied together to form a grid, making sure that water can still run towards the bilges unhindered. Similar bamboo grids should be laid against the lower hoppers and the side shell plating, but not necessarily against internal bulkheads as the formation or passage of ship sweat is unlikely in these areas. The bamboo poles should be inspected to verify that they are clean and dry. Any young, green bamboo poles should be rejected as they may be crushed by the weight of the stow and release moisture which may stain the bags. Thin bamboo poles may not provide sufficient separation between the steelwork and the cargo and should not be used. Insufficient quantities of bamboo poles will produce large gaps between adjacent poles and may not prevent bags from touching the hold steelwork. Consequently, checks should be made before loading to ensure that sufficient materials of acceptable quality are available for dunnaging purposes.

Timber may sometimes be used instead of bamboo, laid out as “double dunnage” in a similar manner to the bamboo poles, again with the first layer running fore and aft. The wood should be of sufficient thickness, clean, dry, resin-free and without damage or odour.

The bamboo dunnage on the tank top, lower hoppers and on the side shell plating should be covered with reed or rattan mats, or with kraft paper. Areas of steelwork where the formation of ship sweat is unlikely (eg bulkheads between holds), or where sweat migrating to the bilges will not generally pass, need only be covered with matting or kraft paper when the bags are loaded to protect against staining, chafing and minor physical damage.

On completion of loading the entire surface of the stow should be covered with kraft paper, not just the area within the hatch square.

Allied Maritime Dunnaging Arrangement

As an alternative to bamboo poles and matting, plastic sheets and styrofoam boards are sometimes used as a barrier to prevent the bags from touching the hold steelwork. This is generally known as the Allied Maritime system which is becoming more common. At least one layer of kraft paper should be laid on the tank tops and the lower hoppers followed by a layer of plastic sheeting. Styrofoam boards are then placed against the side shell plating and also covered with plastic sheeting. Although styrofoam boards may be laid against internal bulkheads, their use in this area is not generally required as the formation or passage of ship sweat is unlikely. Internal bulkheads may therefore be covered with plastic sheeting and kraft paper. Kraft paper or plastic sheeting should then be laid across the full surface of the stow.

However, there is a fundamental flaw in this dunnaging system as although this method protects the cargo from any ship sweat that may form on the shell plating, it does not raise the bags clear of the tank top or lower hoppers, leaving the bags at the bottom of the stow susceptible to damage due to sweat running down the lower hoppers and accumulating on the tank top. Similarly, the careless use of plastic sheeting or the presence of creases in the sheets may hamper the drainage of any sweat that may form during the voyage or bring it into direct contact with the cargo. Due to the potential for cargo to come into contact with sweat using this dunnaging arrangement, its use is not recommended.

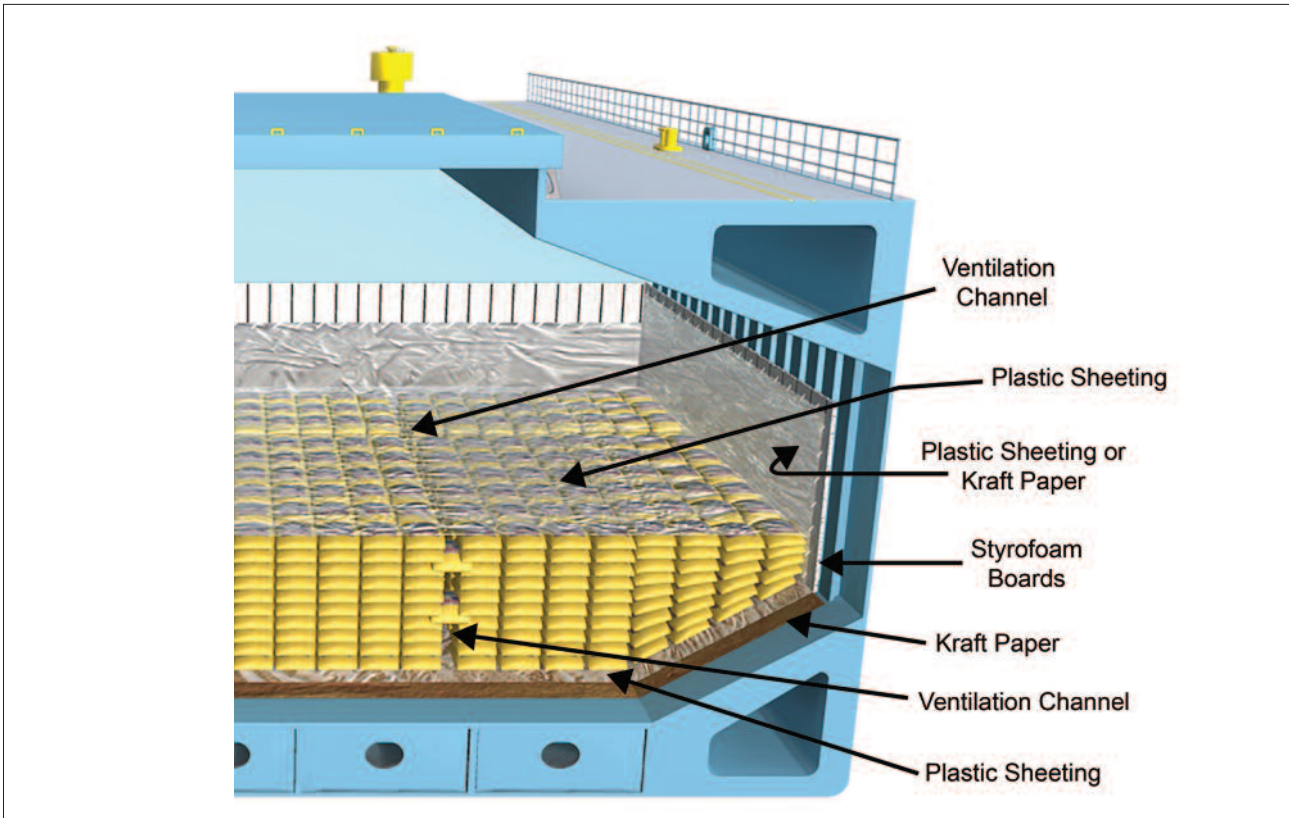
General Dunnaging Considerations

As ship sweat does not usually form on internal hold bulkheads or the engine room bulkhead, the principal purpose of dunnage in these locations is to provide a barrier between the cargo and the steelwork to prevent rust staining and to protect the bags from minor physical damage. The dunnage may consist of kraft paper, matting or plastic sheets. However, if the forepeak tank is to be ballasted with cold water, sweat may form on the forward bulkhead of No 1 hold, requiring additional dunnaging in this area.

Although kraft paper is used extensively in the dunnaging of bagged rice cargoes, its limitations need to be recognised. Kraft paper is used to minimise the possibility of damage due to rust staining and abrasion but provides little protection against wetting. Once saturated, kraft paper is easily damaged.

On some occasions the shipper may attempt to save costs by reducing the quantity of dunnage, for example by providing only one layer of bamboo poles. In such an event the master should issue a letter of protest immediately.

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The Allied Maritime dunnaging arrangement



Photo courtesy of: ETIC/Africa P&I Services

Styrofoam boards and plastic sheetting used in the Allied Maritime dunnaging arrangement



Moisture Content, Temperature and Sampling

Moisture Content

The moisture content of rice is an important factor in its successful carriage. Rice is a hygroscopic commodity that can either absorb or release moisture. Excessive amounts of inherent moisture reduces storage life and increases the risk of mould, discolouration, decay, malodour and caking (ie when rice grains stick together). “Moisture migration” from the warmer to the cooler parts of the cargo may also occur, possibly causing the cargo to deteriorate in the latter areas. It is therefore important that the rice is not unduly moist when presented for shipment and is kept as dry as possible throughout loading, on passage and during discharge.

When harvested, rice still in its husk will have a moisture content of up to 30%. The rice will then be dried, either mechanically or naturally, the former method being more effective. On completion of drying the rice will generally have a moisture content of less than 20%. Milling and additional processing reduces the moisture content still further.

The moisture content of a rice cargo should not exceed 14% at the time of shipment. Typically the moisture content will be between 12% and 14%. Since any figure certifying the moisture content will always be an average amount, it should be borne in mind that some of the rice may have a moisture content up to 0.5% higher. Some shippers may attempt to export rice before it has dried sufficiently for shipment, mixing it with rice with a lower moisture content to obtain an average of 14% or less. In such cases the rice with a high moisture content may still deteriorate and damage other rice in the immediate vicinity while on board. Rice with a moisture content of 13% can usually be stored for approximately 12 months.

Since rice is sold by weight, unscrupulous shippers may not be particularly concerned if the moisture content is unacceptably high at the time of shipment. They will also be aware that if the excessive moisture content causes the rice to deteriorate on passage, the receiver will usually allege that the vessel failed to ventilate the cargo correctly.

Given the claims-sensitive nature of bagged rice, it is customary to appoint a local surveyor. The local surveyor will often be equipped with a portable moisture meter to test and record the moisture content of the rice prior to and during loading. Portable moisture meters need to be calibrated specifically for rice and may only be accurate to +/- 0.5% even when functioning correctly. It is not unusual to find inaccurate portable moisture meters being used, therefore the results obtained from them should be treated with caution.

If the average moisture content of the rice is declared to be over 14%, or if the portable moisture meter readings taken by the local surveyor indicate a moisture content approaching this figure at any stage, the Club should be informed as it may be

necessary to arrange for samples to be taken jointly with cargo interests and sent to a mutually acceptable laboratory for accurate analysis. The Club’s local correspondent should be able to advise which laboratories are suitable.

Temperature

The surveyor should check and record the temperature of the rice regularly throughout loading. Rice delivered to the vessel directly from the mill after processing may be significantly warmer than rice has been stored in a warehouse, possibly resulting in cargo deterioration or self-heating on passage. If concerns arise during loading that the temperature of the rice may be excessive, the Club should be contacted for advice.

Records showing the temperature of the rice during loading will also be required if the vessel is planning to ventilate the cargo holds using the “Three Degree Rule”.

Sampling

Representative samples of rice taken periodically during loading can be of assistance in defending claims if the cargo deteriorates on passage. However, a full time sampling team would need to be present throughout the entire loading process for the samples to be truly representative of the cargo as a whole.

Rain

Since rice is highly susceptible to water damage, it is good practice to keep all hatch covers closed during cargo operations other than the holds being worked. The weather conditions should be monitored closely throughout, ideally using the 3 cm radar (if permitted by the port) to provide early warning of approaching rain so that cargo operations can be suspended and the hatch covers closed in good time. The use of tarpaulins or hatch tents over open hatches is not recommended as they often fail, resulting in water pouring on to the cargo.

A close eye should be kept on rice arriving by truck or barge, particularly if not protected by tarpaulins, looking for any signs that the bags may have been exposed to rain. If wooden barges are used, checks should be made to confirm that the bags have not been affected by water leaking through the hull.

On some occasions the charterer may ask the master to load rice during rain in exchange for a Letter of Indemnity (LOI), sometimes referred to as a “Rain Letter”. The master should not agree to such a proposal as the charterer may still maintain that any subsequent deterioration of the cargo was due to inadequate ventilation on passage rather than rain damage. More importantly, and irrespective of a Letter of Indemnity, intentionally loading rice during rain may prejudice Club cover on the grounds that such an act was imprudent or improper contrary to the provisions of Rule 19(1).

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Cargo Space Ventilation

Since rice is hygroscopic and readily absorbs and releases moisture, it is essential that correct ventilation procedures are followed in order to:

- Remove moist air from the cargo holds, and
- Prevent the formation of ship sweat which may wet and damage the cargo.

Since these two requirements are interlinked, the principles of ventilation need to be understood and applied correctly to ensure that the cargo is discharged in good condition.

Tests and Checks

Prior to loading the entire ventilation system for the cargo holds should be checked. Where fitted, the hold fans should be tested to ensure that they are functioning correctly. Mechanical ventilation rather than natural ventilation tends to be slightly more effective in achieving sound outturns.

Ventilation Requirements

Ventilation of the cargo spaces should be carried out according to either the “Dew Point Rule” or the “Three Degree Rule”. Due to the difficulty of obtaining accurate dew point measurements from within closed holds, the “Three Degree Rule” is considered to be a more robust method for determining when ventilation should be carried out. Consequently, cargo temperatures should be taken and recorded throughout loading to enable this rule to be applied. Detailed guidance on the two ventilation rules can be found in the Club’s Loss Prevention Bulletin [“Cargo Ventilation and Precautions to Minimise Sweat”](#).

Ventilation needs to be considered whenever the hatch covers are shut and the holds contain rice, regardless of quantity. This also includes periods in port if the hatch covers are closed due to rain, or if the vessel is required to anchor at the discharge port prior to berthing. However, if the cargo is fumigated on departure the holds should remain sealed and ventilation should not take place until the end of the waiting period specified by the fumigation contractors.

The formation of ship sweat is highly likely when passing through colder waters regardless of the ventilation method employed, such as passing South Africa when trading between South East Asia and West Africa. This reinforces the need for careful dunnaging to prevent contact between the cargo and any steelwork on which sweat may form or pool.

In order to defend any claims for cargo damage it is essential that the vessel maintains a detailed ventilation log, including temperatures and times of starting and stopping ventilation. These may be used to demonstrate that the cargo was properly ventilated in accordance with industry best practice whilst on board. If it was not possible to ventilate as required due to the weather conditions, such details should also be recorded. Similarly, copies of any fumigator’s instructions regarding the length of time the holds should remain sealed should be retained as it may be necessary to show that the vessel could not ventilate at a critical time during the voyage.

When weather and sea conditions permit, and if a full risk assessment has been carried out and it is deemed safe and practical to do so, consideration may be given to opening sliding or folding hatch covers slightly to aid ventilation of the



Photo courtesy of: ETIC/Africa P&I Services

When a bag rests against steel that has been wetted damage will result



cargo when required. This may be beneficial during extended stays at anchor while awaiting a discharge berth.

Bilge Soundings

Cargo hold bilge soundings should be taken and recorded twice daily. If water is found to be accumulating in the bilges, the source should be investigated at the earliest opportunity. If it is necessary to pump out the bilges, a written record should be maintained of the quantity of water pumped overboard.

Loading Operations

Charterer's Instructions

In some cases the charterer may provide the vessel with written instructions regarding the loading, stowage, carriage, ventilation and discharge of the rice. Reasonable instructions, including demands for ventilation channels, should always be followed as evidence of non-compliance may weaken the vessel's position if the cargo deteriorates on passage.

- Prevent stevedores from using equipment that may cause cargo damage
- Ensure the cargo is stowed in accordance with industry best practice
- Arrange for bags to be weighed at random to check that they are not underweight
- Reject torn bags
- Decline bags which appear to be contaminated (eg water, oil, foreign matter)
- Refuse any bags exhibiting signs of deterioration (eg damp, mould, rot, discolouration, unpleasant odour)
- Assist the master to clause the Mate's Receipts and Bills of Lading as necessary

When bags have been rejected, a careful watch should be kept to ensure that no attempt is made to hide the rejected bags under sound cargo about to be loaded in the hope that they will not be noticed. This can be a particular problem when loading from barges.

To avoid possible conflicts of interest, Members should appoint a protecting agent rather than relying on the charterer's agent. Similarly, the sharing of surveyors and tally clerks with cargo interests to save on costs is not recommended. Invariably the clerks will be appointed by cargo interests and the cargo figures will often favour the appointing party to the detriment of the owner.

If possible, the master should ask to see the appointment details of the surveyors and tally clerks instructed by cargo interests to ascertain precisely who they represent.

Subject to crewing levels and compliance with hours of rest regulations, the vessel should also endeavour to conduct its own tally, comparing the ship's figures at the end of each shift with those produced by other parties. Details of reputable surveyors and tally clerks may be obtained from the Club's local correspondent on request.

Since rice may be pilfered or lost en route to the vessel, the cargo should be tallied during loading rather than at the warehouse or barge loading facility prior to delivery.

If it is found that tally clerks are assuming that each sling or



Photo courtesy of: ETIC/Africa P&I Services

The number of bags in each sling should be determined by accurate tallying

Surveyor and Tally Clerks

Members are advised to appoint their own surveyor and tally clerks at the load port. The surveyor should be instructed to:

- Check the condition of the rice
- Monitor and record the moisture content and temperature of the rice
- Confirm that all dunnaging material is suitable and properly laid

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Photo courtesy of: ETC/Africa P&I Services

Bags should be carefully slung to avoid damage

net contains a standard number of bags rather than determining the exact quantity, a letter of protest should be issued.

Cargo Damage

Any bags presented that are wet, damp, stained, torn, malodorous or contaminated should be rejected and replaced with sound cargo. Bags damaged during loading or found with loose stitching should be returned ashore for repair or replacement. Stevedores should be warned against using hand hooks when stowing the cargo to avoid piercing the bags and spilling the contents. They should also be instructed to use slings that will not damage the bags. Final stowage of bagged rice should always be carried out by hand.

If any bags are damaged during loading in spite of such precautions, for example by the extensive use of hand hooks contrary to the vessel's instructions, the Mate's Receipts should be claused accordingly. It is essential that any clauses added to the Mate's Receipts are accurately reproduced on the Bills of Lading regardless of whether they are to be signed by the master or by an authorised third party. Consideration should be given, where commercially possible, to clausing the Bills of Lading with the words "*London Arbitration and English law to apply*". This can be useful if cargo interests attempt to use a legal forum that may be sympathetic to their claim.

Empty bags will normally be provided by the shipper so that rice spillages during discharge can be re-bagged and landed

ashore for delivery to the receiver. Such bags should be clean, dry and suitably stowed for the voyage.

Cargo Separation

If the vessel is to discharge at more than one port or if there are several receivers, it is essential that the different parcels of rice are separated both horizontally and vertically to minimise the possibility of the incorrect number of bags being discharged.

Infestation of Cargo

Rice cargoes are susceptible to infestation, particularly if stored for several months before shipment. Rice transported to the vessel aboard barges that have not been properly cleaned may be exposed to a similar risk. Should the cargo exhibit any signs of infestation (eg beetles, weevils, moths, rodents), the Club should be notified immediately as expert advice may be required.

Cargo Fumigation

It is common for rice cargoes to be fumigated on completion of loading. The instructions of the fumigation contractors should be strictly followed, and warning notices should be placed on all hold access arrangements stating that fumigation is in progress and that entry is prohibited. Reference should be made to [MSC.1/Circ.1264 "Recommendations on the Safe Use of Pesticides in Ships Applicable to the Fumigation of Cargo Holds"](#) as amended. The cargo holds should remain sealed and ventilation should not resume until the end of the



waiting period specified by the fumigation contractors. It has been reported that some rice shipments from Thailand, Myanmar and Vietnam have been fumigated with methyl bromide while in transit, contrary to IMO recommendations that methyl bromide should only be used in port with no crew on board. If cargo interests state that they plan to fumigate the holds during the voyage using methyl bromide, permission should not be granted and the Club should be contacted for advice.

One of the most common fumigants in use is phosphine which is a colourless and extremely toxic gas, which smells of garlic at low concentrations. Aluminium phosphide tablets or pellets are placed on the surface of the cargo and release phosphine gas after reacting with moisture in the air, leaving behind deposits of grey-white powder on top of the cargo. Since the presence of residues may cause difficulties with some receivers and/or the stevedores at the discharge port, it is recommended that the fumigation contractors are asked to use small bags or sachets of aluminium phosphide specially designed to capture such deposits. It should also be noted that the United States Environmental Protection Agency does not permit any processed commodity, such as milled rice, to come into contact with aluminium phosphide residues.

IMO recommends that fumigated cargo is discharged by mechanical means only. However, this is practically impossible in the case of bagged rice.

Sealing Cargo Holds

To minimise the risk of shortage claims it is advisable for the vessel's surveyor to seal the hatch covers and hold accesses upon completion of loading, preferably witnessed by the surveyor appointed by cargo interests. Prior to closing the hatches it is recommended that high resolution digital photographs are taken of the cargo stow and dunnaging arrangements.

Draft Survey

If the weight of the cargo is to be entered on Bills of Lading either in place of, or in addition to the number of bags, initial and final draft surveys should be undertaken at both the load and discharge ports. Again, the surveyor representing cargo interests should be invited to attend. Invitations should be in writing and, if possible, should include a sentence stating *"Please be informed that the findings and results of the draft survey will be considered joint and binding"*.

Records

A comprehensive log of all cargo operations should be maintained by the vessel including details of any stoppages.

Copies of all cargo documentation (eg cargo quality certificates if provided, tally reports, statements of fact, cargo manifests, stowage plans, letters of protest, photographs, Mate's Receipts, Bills of Lading) should be retained on board.

Photographs

Ideally, high resolution digital photographs of the dunnaging arrangements should be taken prior to loading. Photographs of the stow and the ventilation channels (if built) should also be taken at regular intervals during loading. All photographs should be captioned or catalogued so that the hold and the location within the stow can be identified. Such evidence may prove to be very useful in helping to defend any claims that may arise at the discharge port.

Letters of Protest

If it becomes necessary for the master to issue a letter of protest during loading or discharge, as many details as possible should be included regardless of the recipient (eg shipper, receiver, charterer, stevedores, agent). Remarks of a general nature should be avoided as they may weaken the owner's case in the event of a subsequent cargo dispute.

A letter of protest may be warranted in the following circumstances, but the list is not exhaustive:

- Rice which appears to be visibly wet, mouldy or heated
- Vessel's crew and/or surveyor prevented from taking rice samples
- Insufficient dunnaging material provided to the vessel
- Dunnage supplied in a dirty or wet condition
- Poor quality dunnage being used (eg small diameter or young bamboo poles)
- Dunnage not laid in accordance with standard industry practice
- Bags damaged by the use of hand hooks or inappropriate slings
- Cargo not stowed in accordance with industry best practice
- Damaged cargo not replaced with sound cargo
- Signs of cargo infestation
- Signs of cargo deterioration
- Pilferage by stevedores or other parties
- Cargo operations continuing during rain
- Tally clerks using an assumed figure for the number of bags in each sling or net
- Cargo loaded from or discharged to wet facilities (eg wharf, trucks, barges)

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- Cargo tallied anywhere other than on board or alongside the vessel (eg warehouse)
- Failure of receiver's surveyor to sign the vessel's outturn reports

If any letters of protest regarding the condition of the cargo are issued at the load port, the Mate's Receipts and Bills of Lading should be claused accordingly.

Discharging Operations

Surveyor and Tally Clerks

To minimise the possibility of shortage or quality claims, Members are advised to appoint a local surveyor and a tally company at the discharge port. The local Club correspondent will be able to provide details of independent local survey and tally companies that they consider to be reputable and trustworthy. Since cargo interests will almost certainly make similar arrangements, the master should record the details of all surveyors and tally companies appointed and who they represent. Subject to resources and compliance with hours of rest requirements, a further tally should be carried out by the crew to monitor the figures produced by the tally companies acting for the vessel and cargo interests respectively. It is also recommended that Members appoint their own protecting agent rather than the agent acting for the charterer.

All tallies should take place on or alongside the vessel. However, it is not uncommon for receivers to tally the cargo only when it arrives at their warehouse, increasing the risk of cargo being lost or pilfered en route. The master should issue a letter of protest should such a situation arise, making it clear that the receiver's tally was not conducted on board.

In the event of a shortage claim that leads to litigation or arbitration, the methods employed to tally the bags may be scrutinised. As far as possible the following information regarding the tallying operation carried out on behalf of the vessel and by all third parties should be recorded:

- Details and times of any cargo holds discharged concurrently
- The number of tally men per hold acting for the vessel and for each third party respectively
- The location of the tally men (eg in the hold, on deck, on the quay)
- The tallying methods used (eg whether the bags were counted individually or if it was assumed that each sling or truck contained a certain number of bags)
- Whether the third party tallies were carried out individually, or if there appeared to be collusion between them regarding the number of bags discharged.



Photo courtesy of: ETIC/Africa P&I Services

The large number of bags involved means accurate detailed tallying is necessary



Unsealing Cargo Holds

The surveyor appointed by cargo interests should be invited to attend when the vessel's surveyor removes the seals at the discharge port. Once the hatch covers are opened, high resolution digital photographs of the cargo surfaces and coamings in each hold should be taken before the bags are discharged. Such photographs will provide clear evidence of the apparent condition of the top of the cargo on arrival and may help to refute any subsequent allegations of hatch cover leakage.

With multiple discharge ports it may be worthwhile re-sealing the holds containing cargo after each intermediate discharge port as there have been instances in the past where vessels arriving with unsealed holds have been fined by Customs. Local port agents should be consulted in this respect.

Cargo Condition

If the top tier of bags or the kraft paper covering the surface of the stow show signs of water damage or water stains, the location of the damage in relation to the hatch coamings, hatch vents and hatch cover cross joints should be recorded and photographed. Fresh rust stains or streaks on the inside of the hatch coamings, on the underside of the upper hoppers or on top of the bags or kraft paper may signify sea water ingress on passage. Testing for chlorides with silver nitrate will generally indicate whether or not this was the case.

Any damp or water damaged bags found during discharge should be recorded and photographed, noting their precise location within the stow and whether the staining/wetting

corresponds with possible contact with steelwork. If surrounded on all sides by sound cargo, the bags may have been damaged before loading by rain or while on board a wet barge. Alternatively, cooling at the edges of the stow or pockets of self-heating may have produced a temperature differential resulting in moisture migration, or the rice itself may have been excessively moist on loading resulting in localised deterioration. Water damage to bags on the tanktop, lower hoppers and at the ship's sides is usually indicative of contact with ship sweat.

If various bags are found to be discoloured or stained brown, checks should be made to determine whether they were stowed against a hot surface such as heated fuel oil tanks. Parboiled rice seems to be more susceptible than others to this type of damage.

Glazed white rice may be affected by caking if the coating was not properly applied or was otherwise defective, rather than due to excessive moisture.

Any evidence of damage or deterioration should always be photographed, recorded and reported to the company immediately. The surveyor acting on behalf of the ship should also investigate the damage to ascertain whether it was caused by the vessel, a third party or an inherent vice of the cargo. Depending on the extent, severity and cause of the damage, it may be necessary to appoint an expert to provide further advice.

If rice is seen to suffer damage after it has been discharged in sound condition (eg if bags are left standing on the quay during



Photo courtesy of: ETIC/Africa P&I Services

Moisture found behind plastic sheeting used in the Allied Maritime dunnaging arrangement



Photo courtesy of: ETIC/Africa P&I Services

Kraft paper showing rust spots and signs of having been wetted and then dried

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Photo courtesy of: ETIC/Africa P&I Services

Traditional dunnaging arrangement with evidence of the passage of moisture over the lower hopper

rain or if bags on trucks or barges are not promptly covered with tarpaulins during rainfall), the master should issue a letter of protest as a precaution.

If rice is loaded in very cold conditions (eg Northern China in winter) and is discharged in a much warmer location, cargo sweat may form on the bags during discharge or after landing ashore. Such bags should not be placed into storage until the sweat has dried off.

Outturn Reports

The tally clerks should be instructed to prepare an outturn report documenting the number of sound bags and the number of damaged bags discharged each day. The type of damage should be specified (eg torn, damp, wet, mouldy, stained or caked). The records should also state the number of bags filled with sweepings from the hold, pilfered, lost overboard during cargo operations, found empty, or gifted by cargo interests to third parties.

If the master is asked to approve daily outturn reports produced by tally clerks acting for cargo interests, he should sign them "for receipt only". However, if cargo interests are willing to endorse the vessel's tally records, the master may

sign such outturn reports, adding any qualifying comments as necessary. Both sets of tally figures will almost certainly differ each day. However, this is not necessarily a cause for concern unless the difference is large. In such an event, or if the figures are identical, the local Club correspondent should be contacted for advice.

Cargo Faces

The officer in charge of the cargo watch should ensure that the stevedores discharge the bags evenly and do not leave any high, exposed, vertical cargo faces. Unsupported cargo faces often collapse, resulting in fatalities, injury and cargo damage.

Cargo Sweepings

When sweepings are re-bagged, the new bags are often over-filled to the point where they may exceed the weight of a standard sound bag by a significant margin. If the amount of sweepings on board is large, this may result in an apparent shortage. Similarly, counting errors may arise if tally clerks assume that each sling or net contains a specific number of bags rather than determining the actual quantity. If either practice is observed, a letter of protest should be issued.



Photo courtesy of: ETIC/Africa P&I Services

High unsupported cargo faces should be avoided due to the danger of collapse

Pilferage and Theft

The risk of rice being pilfered or stolen in many discharge ports is well recognised. Typically, stevedores inside the cargo holds will cut open bags and transfer the contents into small plastic bags, concealing them under their clothing when they leave the ship. While one may sympathise with those who take a small quantity of rice to feed themselves and their families, it is not uncommon for such a practice to be organised by local racketeers and for stevedores to make several trips ashore with pilfered rice during the same shift.

Stevedores who are challenged can be threatening or violent and may also try to intimidate security personnel so that they can continue their pilfering activities unhindered. On a somewhat larger scale there have also been cases where rice has been discharged directly into trucks operated by thieves rather than the receiver.

In order to control pilferage it is recommended that Members appoint their own security guards, preferably with dogs, as a deterrent. Although it is unlikely that such measures will eliminate the risk, it is possible that potential thieves may look for an easier target elsewhere.

Anyone seen inside a cargo hold who does not appear to be a stevedore should be asked to leave. If pilferage is observed, those involved should be told to stop and security personnel should be instructed to escort them ashore and prevent them

from returning. Any holds not being worked should be closed and accesses locked.

Should pilferage begin to escalate beyond control, the vessel may threaten to close the hatch covers and suspend cargo operations until all parties agree an appropriate course of action. However, such a step should not be taken lightly and both owners and the local Club correspondent should be consulted first. If it is necessary to halt cargo operations due to pilferage, the stoppage should be kept to a minimum as the port authority may order the vessel to vacate the berth if there are other vessels waiting to discharge, or may impose a fine for occupying a berth while idle.

If these measures fail to reduce pilferage, the master should issue a letter of protest holding cargo interests responsible for such losses and circulate it to all interested parties.

Records

A comprehensive record of cargo operations should be maintained by the vessel throughout discharge, including details of all stoppages.

Photographs

High resolution digital photographs of the cargo and discharge operations should be taken throughout. However, this may not be possible in some ports where the stevedores may react aggressively.

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Photo courtesy of: ETIC/Africa P&I Services



Large quantities of sweepings may give rise to an apparent shortage due to overfilling of bags

Rice in Bulk

International Grain Code

The safe carriage of rice in bulk is governed by IMO's "International Code for the Safe Carriage of Grain in Bulk", also known as the "International Grain Code". To meet the required stability requirements, holds are usually filled so that there is minimal or no free air between the top of the stow and the top of the hold. In partly filled holds the cargo may be covered with tarpaulins or similar and either overstowed with bags or other suitable cargo. In both cases this makes ventilation difficult. However, standard ventilation procedures should still be followed and recorded.

Hold Preparation

In addition to ensuring that the cargo holds are cleaned in accordance with the section on Hold Cleanliness, all steelwork coatings inside the holds should be in good condition (eg tank tops, hopper tanks, topside tanks, undersides of hatch covers, ladder rungs, vent pipes). In addition, the charterer or shipper should be asked whether they have any specific hold cleaning requirements to minimise the possibility of delays and additional expenditure at the load port.

Bilge plates should be covered with burlap (hessian) cloth or similar to prevent rice from entering the bilge wells.

Dust

Dust can be produced during loading operations, although usually less than for bulk grain. However, it may be advisable to protect sensitive equipment such as radar scanners and for personnel on deck to wear suitable Personal Protective Equipment (PPE) such as safety goggles, dust masks and long sleeved overalls.

Surveyor

In common with rice in bags, rice is equally claims-sensitive when carried in bulk. Members are again advised to appoint an independent surveyor and their own agents at the load and discharge ports to protect their interests. The surveyor should be instructed to:

- Conduct initial and final draft surveys
- Check the condition of the rice
- Monitor and record the moisture content and temperature of the rice
- Check for any infestation or contamination of the rice
- Reject any unsound rice
- Provide the vessel with sealed cargo samples taken throughout loading from all holds
- Seal the cargo holds on completion of loading/unseal the cargo holds prior to discharge

- Assist the master to clause the Mate's Receipts and Bills of Lading as necessary

Appointing a single surveyor or port agent to act for both cargo interests and the vessel is unwise as the surveyor will be inclined to favour the former. Employing independent security guards at the discharge port is recommended. Cargo interests should be invited to attend all draft surveys and the sealing/unsealing of the holds.

Bagging upon Discharge

Bulk rice will sometimes be bagged on the wharf under the ship's hooks. Cargo interests and their surveyors will often produce daily outturn reports stating the number of bags discharged. When presented with such reports the master should add suitable remarks to make it clear that the amount of cargo discharged was not measured accurately and was based on a theoretical weight per bag (usually 50 kg). Bagging machines are notoriously inaccurate and need to be recalibrated and the weight of bags rechecked on a regular basis, ideally at least once an hour. As far as possible, surveyors should weigh bags produced by bagging machines at random to check for anomalies.

Records and Photographs

A comprehensive log of all cargo operations should be kept by shipboard personnel including details of any stoppages. A photographic record should also be maintained, ideally taking high resolution digital images of the rice being loaded, the top of the stow in each hold before the hatch covers are closed, the condition of the cargo when the hatch covers are opened at the discharge port and at frequent intervals during discharge.

Members requiring further guidance should contact the [Loss Prevention department](#).